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Dated 16 May 2003

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17 APR 2002

ır reference	BOOC / P26365GB	
ent application number *e Patent Office will fill in this par*	0208730.2	17APR02 E711635-1 D02866 P01/7700 0.00-0208730.2
l name, address and postcode of the or of h applicant *(underline all surnames)*	The Boots Company plc 1 Thane Road West Nottingham NG2 3AA United Kingdom	
ents ADP number *(if you know it)*		6859672002
ne applicant is a corporate body, give the ntry/state of its incorporation	United Kingdom	
e of the invention	A PACK	
ne of your agent *(if you have one)* ddress for service" in the United Kingdom vhich all correspondence should be sent *luding the postcode)*	~~ERIC POTTER CLARKSON~~ ~~PARK VIEW HOUSE~~ ~~58 THE ROPEWALK~~ ~~NOTTINGHAM~~ ~~NG1 5DD~~	Appleyard Lees 15, Clare Road HALIFAX West Yorkshire HX1 2HY
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his application is divided or otherwise ived from an earlier UK application, give number and the filing date of the earlier lication	Number of earlier application		Date of filing *(day / month / year)*
statement of inventorship and of right to nt of a patent required in support of this uest? *(Answer 'Yes' if:* *any applicant named in part 3 is not an inventor; or* *there is an inventor who is not named as an applicant, or* *any named applicant is a corporate body.* *See note (d))*	YES		

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Description	9
Claims(s)	3
Abstract	1
Drawing(s)	5 + 5

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Translations of priority documents	0
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Request for preliminary examination and search *(Patents Form 9/77)*	YES
Request for substantive examination *(Patents Form 10/77)*	NO
Any other documents *(please specify)*	

11. I/We request the grant of a patent on the basis of this applicat

Eric Potter Clarkson

Signature

ERIC POTTER CLARKSON

Date 16 A

12. Name and daytime telephone number of person to contact in the United Kingdom

0115 9552211

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A Pack

This invention relates to a pack, and particularly, but not exclusively to a pack for containing medicinal pills, vitamin pills, sweets and the like. The invention relates particularly to packs that comprise one or more pockets into which one or more pills may be packed.

It is known to pack pills in blister packs made of a plastics material such as Poly Vinyl Chloride (PVC) or polypropylene (PP). Such packs are shaped to have a plurality of pockets into which an individual pill is contained. The pack is sealed by for example a sheet of foil. When a consumer needs to take a pill, they simply push the pocket containing the pill up towards the sheet of foil, forcing the pill through the foil thereby breaking the seal and releasing the pill. All other pills remain in respective pockets that remain sealed. Blister packs of this type are known as primary packaging.

In order to enable a consumer to push a pill through the sheet of foil, the blister pack is made of a highly flexible material, such as PVC or PP. Due to the material properties, the PVC or PP must be thin in order to allow sufficient flexibility and to ensure that the pocket may be sufficiently deformed by a force easily applied by a consumer. Because of the flexibility of the pack, it is necessary to protect the pack from damage whilst at the point of sale and before a consumer has purchased the pack. It is known therefore to pack the blister pack in another stronger outer pack known as secondary packaging. The secondary packaging is often in the form of a cardboard box, for example.

A problem with existing packs of this type is that the packaging is relatively expensive since both primary and secondary packaging are required.

According to a first aspect of the invention there is provided a pack comprising:

a base portion,

pocket defined by a pocket wall and comprising an open end, and an opposite closed end, the pocket being attached to the base portion at an intersection between the base portion and the pocket wall;

characterised in that the pocket wall comprises a hinge at or in the vicinity of the intersection between the pocket and the base portion.

The pack according to the invention obviates the need for a secondary packaging such as a carton. The pack therefore may also serve as a brand carrier.

The pack may also serve as an information carrier and as such is able to impart important information to the consumer. The information may relate to dosage, contra-indications and safety for example:

The information may be applied directly to the pack by, for example, screen printing, or labelling, or may be applied to a leaflet affixed to or carried by the pack.

Preferably, the pack further comprises a sealing portion extending over the open end of the pocket to close the open end.

Preferably the base portion and the pocket are formed from a polymer such as polypropylene (PP).

The pocket may contain an item such as a pill. The pill may be released from the pack by applying a force to the closed end of the pocket. This causes the pocket to deform, pushing the closed end towards the sealing

portion. This in turn causes the pill to be pushed through the sealing portion, and hence to be released from the pack.

The pocket must be sufficiently rigid to protect the pill whilst the pack is in transit between the manufacturer and the wholesaler, and also between the wholesaler and the retailer. In addition it must be strong enough to prevent accidental loss of the pill at the point of sale, before purchase by a consumer, and also once purchased, while being carried around by a consumer.

On the other hand the pocket must be sufficiently deformable to enable a consumer to easily push the pocket to deform it, to force the pill within the pocket to break the seal of the sealing portion allowing release of the pill.

It had previously been believed that it would not be possible to use PP or similar materials for making a pack to contain pills, that would be sufficiently strong to allow the pack to serve as both the primary packaging and the secondary packaging. As mentioned hereinabove with reference to the prior art blister packs, it had previously been believed that the pockets in the blister pack must be formed from a very thin layer of PVC or PP in order that the force required to push the closed end of a pocket towards the sheet or foil and thus force a pill through the foil would not be too great and could be applied with one hand of a consumer. When the PP is appropriately thin, it does not have sufficient rigidity to afford sufficient protection to the packaging and therefore a secondary packaging is required.

However, the inventors have realised that by forming the pack so that there is a hinge between the pocket and the base portion, it is possible to use a thicker layer of PP to form the pocket wall, whilst at the same time

requiring a sufficiently low force to deform the pocket and allow the pill to the released from the pack.

The hinge forms a "weak" bridge between the base portion and the pocket wall. This reduces the level of force that is required to deform the pocket.

The hinge may be formed from a portion of pocket wall which is thinner in cross-section than the remainder of the pocket wall and which extends substantially around the circumference of the pocket.

Alternatively, the hinge may comprise a portion of the wall which is thinner in cross-section than the remainder of the pocket wall and which runs only partially around the circumference of the pocket.

The hinge may be formed from a plurality of thinner wall portions which are positioned at spaced apart intervals around the circumference of the pocket.

The hinge may be formed from a region of the wall having a variable thickness over a predetermined portion of the wall.

Preferably the hinge is integrally formed with the wall. Alternatively it is separately formed.

Preferably, the pack comprises more than one pocket. Conveniently, each pocket is adapted to hold one pill.

The pocket may hold more than one pill. This may be useful if the usual dose of the pill held in the at least one pocket is more than one pill. For

example, if the usual dose of a particular pill is three at a time, then the at least one pocket may be adapted to hold three pills.

Advantageously, the closed end of each pocket is substantially dome shaped. When a consumer wants to take a pill, the consumer applies pressure to the closed end, causing the closed end to move towards the sealing portion. This movement causes the pill to be forced through the sealing portion, breaking the seal and allowing release of the pill.

Because the pockets are domed shaped, when a force is applied to the dome, the hinge allows relative movement of the pocket and the base portion, and the result of applying a force to the dome is that the dome will invert under the force applied, thus causing the tip of the dome to move towards the sealing portion. As the pressure is applied, the deformation of the dome will reach a point where the dome "flips" and inverts so that it becomes convex rather than concave.

Preferably, the pack is designed such that invertion of the dome causes the dome to "over centre" about the hinge. The dome will therefore remain in the inverted position after the pill has been forced out of the pocket. This can be particularly useful in providing a consumer with a visual indication that the pill within a particular pocket has already been released.

Advantageously, the pack is formed from injection moulding. This allows accurate shaping of the pack to be achieved. In addition it allows the thickness of the wall to be varied as required.

It had previously been thought that it would not be possible to use injection moulded PP to make a pack for containing pills.

Advantageously, the pack is moulded so that the pockets are formed in their inverted position. The pockets are then forced into their non-inverted state after moulding. This means that the hinge is pre-stressed and thus a plastic "living" hinge is formed. This in effect means that the PP molecules have arranged themselves linearly during the stressing process and this further reduces the force which is required to invert the dome and force the pill from the pocket.

The pockets may be forced into their non-inverted state by means of mechanical or hydraulic force for example, by a pressurised air jet.

Advantageously, each pocket comprises further wall portions that are thinner in cross-section. These portions further reduce the force required to invert the dome, whilst still allowing the pocket to be formed generally from a thicker layer of PP which will provide sufficient protection for the pill.

Conveniently, the further areas of reduced wall thickness comprise one or more concentric rings extending circumferentially around the pocket, and being spaced apart axially from another.

The invention is particularly useful for forming a pack to contain pills, that serves as both the primary and the secondary packaging, thus obviating the need for a secondary packaging. The pack then acts as a brand and/or information carrier. However, the pack according to the invention may also be used as a primary packaging which can be placed inside a secondary packaging.

The invention will now be further described by way of example with reference to the accompanying drawings in which:

Figure 1a is a schematic representation of a pack according to a first embodiment of the present invention in which the pack serves as a secondary packaging housing a standard blister pack showing the position of the blister pack;

Figure 1b is a schematic representation of the pack of Figure 1 before any pill shave been removed from the pack;

Figure 2 is a detailed representation of a pocket of the pack of Figures 1a and 1b with the pill sealed within the packet;

Figure 3 is a schematic representation of a pocket of Figure 1 showing the pill being pushed out of the pocket;

Figure 4 and 5 are schematic representations of a pack according to a second embodiment of the present invention in which the pack serves as both primary and secondary packaging; and

Figure 6 is a schematic representation of the pack of Figures 4 and 5 showing a user applying a force tothe pack in order to push a pill out of a pocket.

Referring to Figures 1a, 1b, 2 and 3, a pack according to the present invention is designated generally by the reference numeral 10. The pack comprises a base portion 11 and a plurality of pockets 12. The pockets are sealed by means of a sheet of foil 13 which extends over the pockets 12 via a blister pack 20 forming the secondary packaging.

The package 10 is formed from a polymer such as polypropylene (PP). The package may be formed by any appropriate means but preferably is formed by injection moulding.

The pocket 12 comprises a pocket wall 14 of a predetermined thickness. The pocket intersects with the base portion 11 at a hinging point 15. The

hinging point may be formed from an area of the pocket wall which is thinner in cross-section than the remainder of the pocket wall, and allows the pocket 12 to move relative to the base portion 11.

The pocket 12 is substantially dome-shaped, and when a consumer wants to access a pill 16 contained within the pocket 12, the consumer merely has to apply force to the pocket 12 causing the pocket to hinge about the hinging point 15 thus causing the dome to invert as shown in Figure 3. This causes the pill to be pushed through the foil 13, thus breaking the seal and allowing access to the pill 16.

The pocket comprises a concentric ring 19 in which the pocket wall is of reduced thickness. The ring 19 reduces the force required to deform the dome.

As the pocket 12 is forced in the direction of arrow 17 by the force applied by a customer, the base portion forming the side walls 18 of the pocket 12 flex and "over centre" at the hinging point 15. This causes the dome to invert and remain inverted. This allows the customer a visual means of identifying how many pills are left in the pack since it is clear that any pockets which are inverted no longer contain a pill.

The pack described and illustrated with reference to Figures 1 to 3 is shown forming a primary packaging which has been placed within a secondary packaging 19 in the form of a standard blister pack. However, as has been explained hereinabove, the invention is also suitable for forming a single packaging which takes the place of both the primary and the secondary packaging.

With reference to Figures 4 to 6, a second embodiment of the invention is shown. In this embodiment a pack 40 is shown which is able to serve as both the primary packaging and the secondary packaging. Parts of the pack which correspond to parts shown in Figures 2 and 3 have been allocated the same reference numerals for the sake of clarity.

Referring to the figures, it can be seen that the pack 40 no longer contains a blister pack 20, and therefore serves as both the primary and secondary packaging. The hinging point 15 may be formed from an area of the wall having a thinner cross-section or alternatively may be formed by an area of the wall having a variable cross-section.

Turning to Figure 6, it can be seen that the operation of releasing a pill 16 from a pocket 14 may be achieved with one hand of the consumer while the other hand holds the pack in place.

CLAIMS

1. A pack comprising:

a base portion,

a pocket defined by a pocket wall comprising an open end, and an opposite closed end, the pocket being attached to the base portion at an intersection between the base portion and the pocket wall;

characterised in that the pocket wall comprises a hinge at or in the vicinity of the intersection between the pocket and the base portion.

2. A pack according to Claim 1 further comprising a sealing portion extending over the open end of the pocket.

3. A pack according to Claim 1 or Claim 2 wherein the base portion and the pocket are formed from a polymer.

4. A pack according to Claim 3 wherein the polymer comprises polypropylene.

5. A pack according to any one of the preceding claims wherein the hinge comprises a portion of the pocket wall having a thinner cross-section than the remainder of the pocket wall.

6. A pack according to Claim 5 wherein the hinge extends substantially around the circumference of the pocket.

7. A pack according to Claim 5 wherein the hinge extends partially around the circumference of the pocket.

8. A pack according to Claim 5 wherein the hinge comprises a plurality of thinner wall portions positioned at spaced apart intervals around the circumference of the pocket.

9. A pack according to any one of the preceding claims wherein the pocket is substantially domed shaped.

10. A pack according to any one of the preceding claims wherein the pocket comprises further thinner wall portions spaced apart axially from the hinge.

11. A pack according to Claim 10 wherein the further thinner wall portions each extends circumferentially around the pocket to form one or more concentric rings spaced apart axially from one another.

12. A pack according to any one of the preceding claims wherein the hinge is pre-stressed.

13. A pack according to any one of the preceding claims comprising a plurality of pockets.

14. A pack according to Claim 13 wherein each pocket is adapted to hold one pill.

15. A pack according to Claim 13 wherein each pocket is adapted to hold more than pill.

16. A pack according to any one of the preceding claims formed from injection moulding.

17. A method of forming a pack according to any one of claims 1-16 wherein the hinge is pre-stressed during the manufacturing process.

18. A method of manufacturing a pack according to any one claims 1-16 wherein the pocket is "over centred" about the hinge.

Abstract

A Pack

A pack comprising:

a base portion,

a pocket defined by a pocket wall comprising an open end, and an opposite closed end, the pocket being attached to the base portion at an intersection between the base portion and the pocket wall;

characterised in that the pocket wall comprises a hinge at or in the vicinity of the intersection between the pocket and the base portion.

Fig 1a

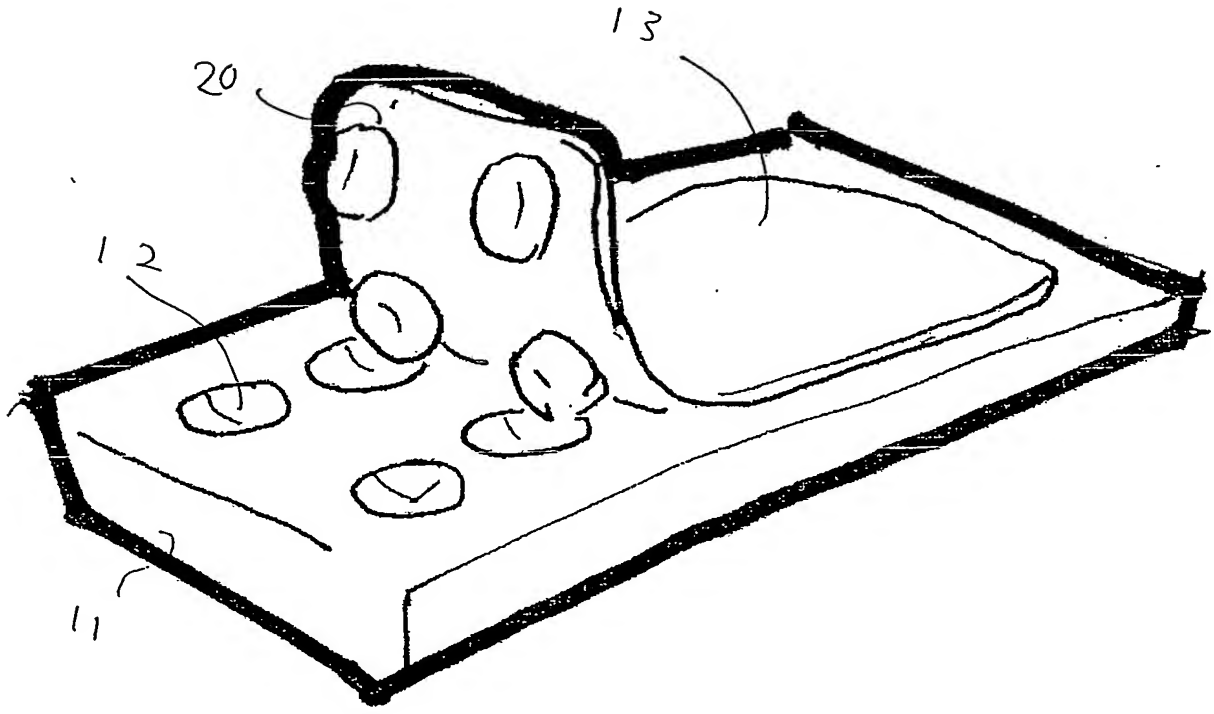

Fig 1a

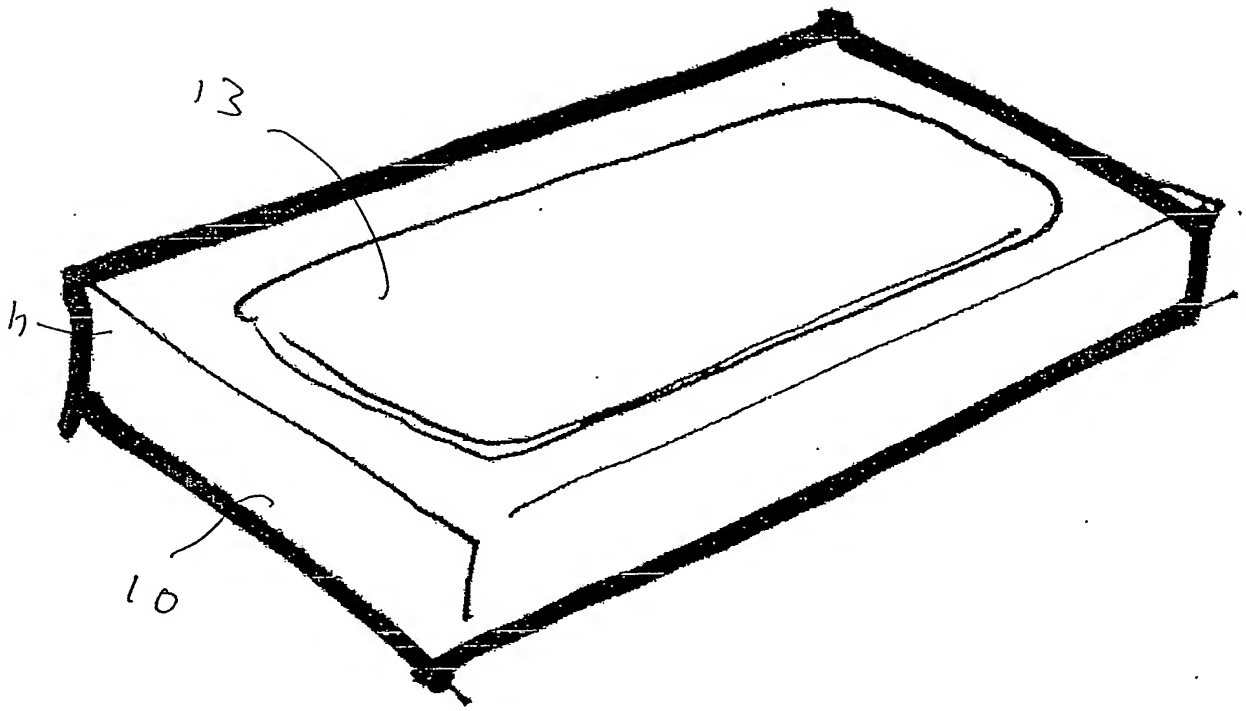

fig 1b

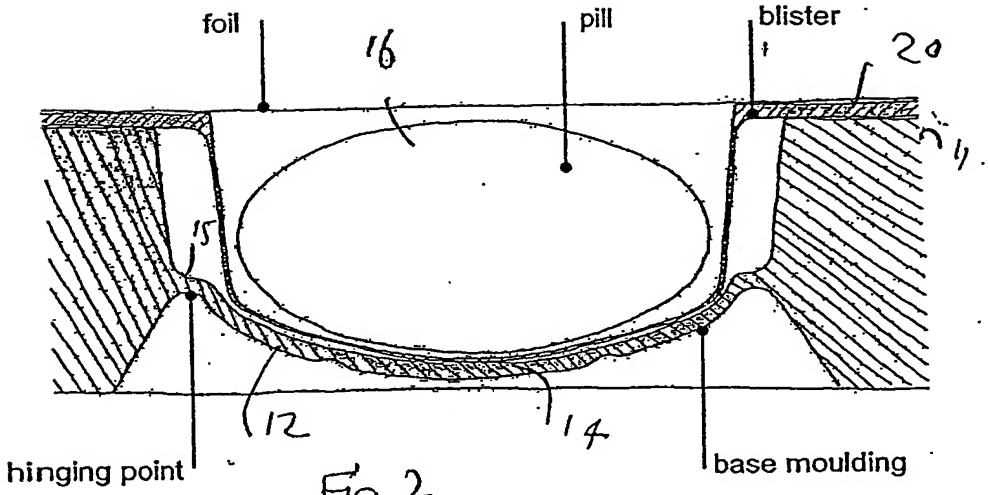
foil
16
pill
blister
20
11
15
12
14
hinging point
base moulding

Fig 2

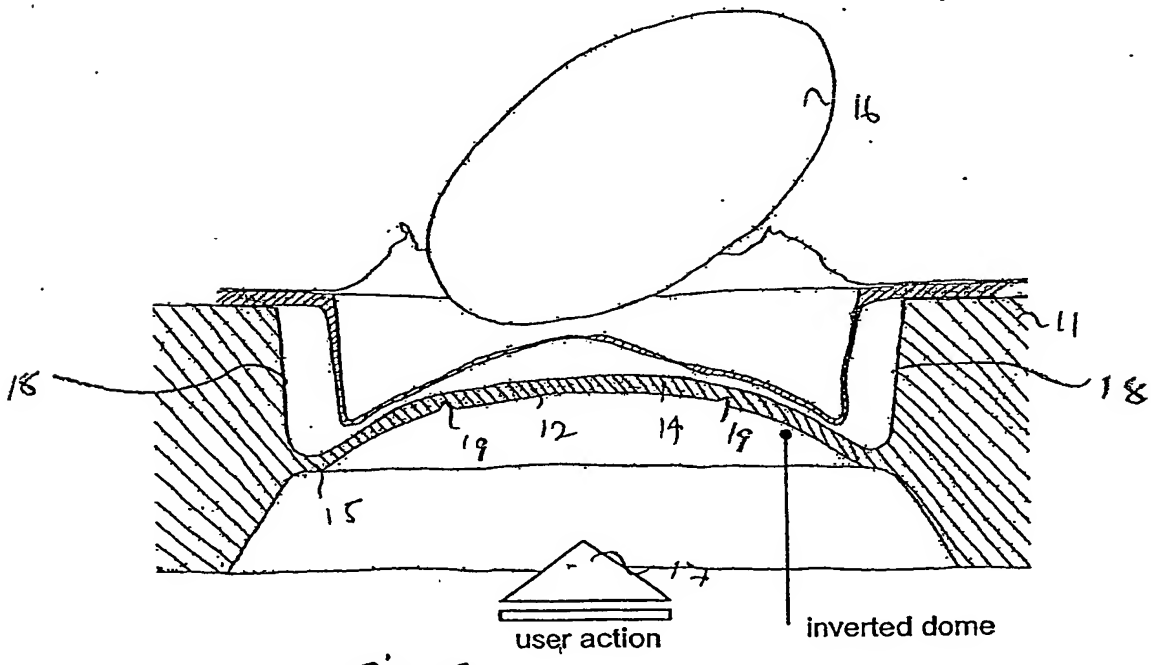
16
11
18
18
19
12
14
19
15
17
user action
inverted dome

Fig 3

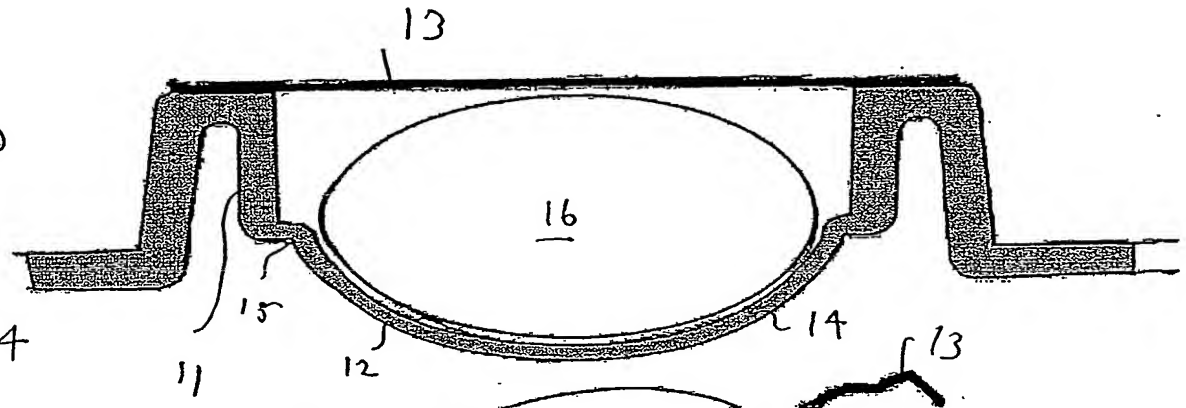

Fig 4

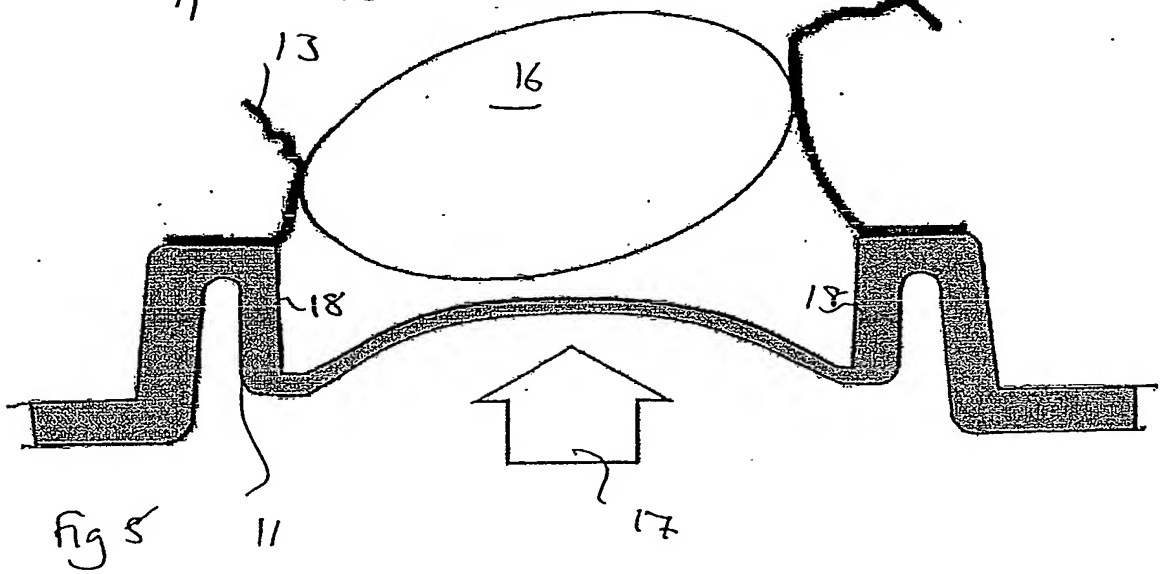

Fig 5

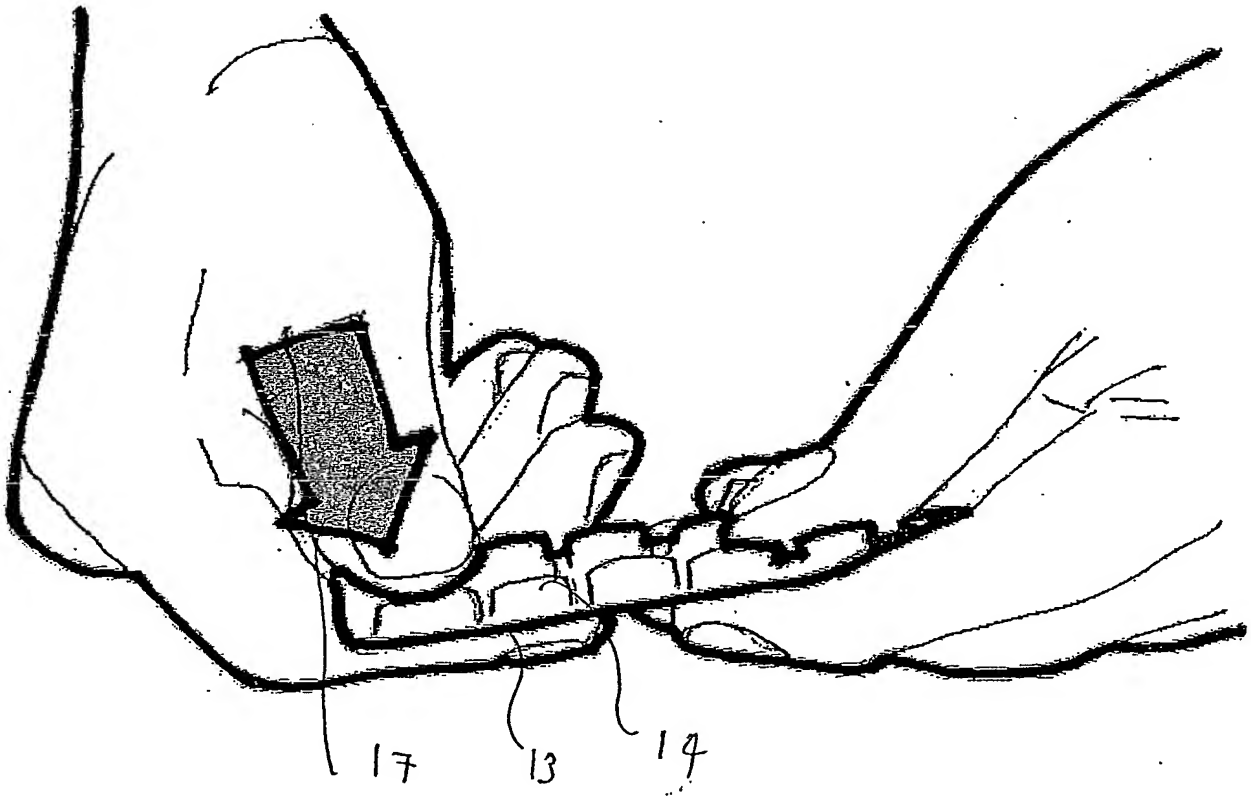

Fig 6